

CONNECTOR INTERFACE PIN MAPPING

FIELD

[0001] The subject matter described herein relates to connector mapping including Universal Serial Bus (USB) connector mapping.

BACKGROUND

[0002] Physical connectors, such as the connector used with the Universal Serial Bus (USB), can be used to couple devices. USB standards define physical and electrical aspects of USB. Examples of those standards include Universal Serial Bus 3.1 Specification, Universal Serial Bus 3.0 Specification, and any additions, revisions, and updates thereto.

SUMMARY

[0003] Methods and apparatus, including computer program products, are provided for connector interface mapping.

[0004] In some example embodiments, there is a method. The method may include detecting, at a first device, an orientation of a data connector connectable to a data interface, the data interface having a first portion and a second portion, the first portion coupled to a single port of a first type at the first device; sending, by the first device, the detected orientation information to a second device; and receiving, at the first device including the single port, data sent by the second device to the single port.

[0005] In some variations, one or more of the features disclosed herein including the following features can optionally be included in any feasible combination. The data interface may include at least one of a universal serial bus plug and a universal serial bus receptacle. The orientation information may represent whether the data connector is in a first orientation or a second orientation rotated by about 180 degrees. The data interface may include at least two communication control pins and, wherein the detecting the orientation information may include determining that the data connector is in the first orientation, in response to detecting a current at a first communication control pin and determining that the data connector is in the second orientation, in response to detecting a current at a second communication control pin. The first portion and the second portion may be positioned symmetrically, wherein when the data connector is in the first orientation, the single port is connected to a first connector portion of the first type, and when the data connector is in the first orientation, the single port is connected to a second connector portion of the first type. The orientation information may be sent through one of the communication control pins. The data interface may include at least one second port of a second type. The orientation information may be sent by the second port. The single port of the first type may be a universal serial bus 3.0 port and the second port of the second type may be a universal serial bus 2.0 port. The second device may include a plurality of ports of the first type and the orientation information enables the second device to select one of the plurality of ports to couple to the first portion and the single port at the first device.

[0006] In some example embodiments, a method may include receiving, by a device, orientation information from another device, the orientation information representative of an orientation of a data connector coupled to the other device; selecting, by the device based on the received orientation

information, one of a plurality of ports of a first type connected to a data interface; and sending, by the device, data to the selected one of the ports.

[0007] In some variations, one or more of the features disclosed herein including the following features can optionally be included in any feasible combination. The device may detect an orientation of a plug connected into the data interface. The data interface may include a universal serial bus receptacle, and the plug may include a universal serial bus plug. The selecting may further include selecting one of the plurality of ports based on the received orientation information and the detected orientation information. The single port of the first type may be a universal serial bus 3.0 port. The received orientation information may represent whether the data connector is in a first orientation or a second orientation rotated by about 180 degrees. The data interface may include at least two communication control pins, at least one of the communication control pins located in a first row of the data interface, and at least another of the communication control pins located in a second row of the data interface.

[0008] The above-noted aspects and features may be implemented in systems, apparatus, methods, and/or articles depending on the desired configuration. The details of one or more variations of the subject matter described herein are set forth in the accompanying drawings and the description below. Features and advantages of the subject matter described herein will be apparent from the description and drawings, and from the claims.

DESCRIPTION OF THE DRAWINGS

[0009] In the drawings,

[0010] FIG. 1 depicts an example connector;

[0011] FIG. 2 depicts an example of a system **200** configured to detect the orientation of a connector or to select a port over which to communicate, in accordance with some exemplary embodiments;

[0012] FIG. 3 depicts an example of a process **300** for detecting the orientation of a connector or selecting a port over which to communicate, in accordance with some exemplary embodiments; and

[0013] FIG. 4 depicts an example of an apparatus, in accordance with some example embodiments.

[0014] Like labels are used to refer to same or similar items in the drawings.

DETAILED DESCRIPTION

[0015] In some example embodiments, there is provided a type of data connector as depicted in FIG. 1. The connector may comprise a single, small-sized connector, such as a universal serial bus (USB) connector, that can be swapped, so that an end-user does not need to be concerned with the whether the connector is connected to a host or a slave device or in which way the connector plug is inserted to a receptacle.

[0016] A USB connector may be implemented, as depicted at FIG. 1, so that there is one USB3.0 bus at either end of the connector which can be used to couple to a USB host device or a USB slave device. Moreover, the connector can be rotated or twisted and still be compatible with a mated receptacle. This differs from prior USB connectors having physically different host connectors and slave connectors. Although a device may have a dual-row connector or receptacle as shown at FIG. 1, some devices may choose to implement only a portion of the dual-row receptacle. Moreover, even though a